UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

		Application No.	Applicant(s)
Office Action Summary		10/602,368	CAROLLO ET AL.
		Examiner	Art Unit	
		MengYao Zhe	2109	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 April 2007*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,8 and 16-30* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4, 8,16-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 April 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date *4/26/2007*.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

DETAILED ACTION

1.   Claims 1, 3, 4, 8, 16-30 are presented for examination.

Specification

2.   Applicant is reminded of the proper language and format for an abstract of the

disclosure. The abstract should be in narrative form and generally limited to a single

paragraph on a separate sheet within the range of 50 to 150 words. It is important that

the abstract not exceed 150 words in length since the space provided for the abstract

on the computer tape used by the printer is limited.

The abstract is objected to. It has exceeded the 150 word limit. Appropriate correction is

required.

Arrangement of the Specification

3.   The specification is objected to. Pages 1 to 4 of the specification should be

grouped under the section heading: BACKGROUND OF THE INVENTION.

Claim Rejections - 35 USC § 112

4.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly
claiming the subject matter which the applicant regards as his invention.

5.   Claims 1, 3, 4, 8, 16-30 are rejected under 35 U.S.C. 112, second paragraph, as

being indefinite for failing to particularly point out and distinctly claim the subject matter

which applicant regards as the invention.

a.   The following claim languages are unclear and indefinite:

i)   As per claim 1, lines 3-4, claim 19, line 4, and claim 25, lines 4-5, it is uncertain what is meant by "defining said...and other virtual machines...of a real computer". < i.e. what has been defined? How is defining accomplished? > Moreover, it is unclear how the CPU and other real resources of a real computer is related to the virtual machine operating system base portion and said first virtual machine.

Claim 1, Line 8, claim 19, line 6, and claim 25, it is uncertain what is meant by "...said base portion being common to all of said virtual machines...". < i.e. does being common mean all virtual machines are controlled by the base portion? Are virtual machines all sharing the memory in the base portion? >.

Claim 1, Line 7, it is uncertain if "said base portion" refers to a virtual machine operating system base portion in lines 2-3 <i.e. if they are the same, the same name should be used throughout the entire claims.>.

Claim 1, Lines 11-12, claim 19, line 9, and claim 25, it is unclear how the output buffer is related to the first virtual machine and it is unclear where the output buffer resides.

Claim 1 Line 21, claim 19, line 17, and claim 25, it is uncertain if "said computer" refers to a real computer on line 4.

Claim 1, Lines 18-21, claim 19, line 15, and claim 25, it is unclear how the invention as claimed does the determining step and the method it uses to determine that the IP address does not correspond to other virtual machines. Moreover, it is unclear what "otherwise reside in said computer" means. < i.e. does it mean that there are other components that the IP datagram can be sent to other than virtual machines that reside in the computer? >.

Claim 1, Lines 2 and 21-22, claim 19, line 15-16, and claim 25, it is not clearly understood what is the connection between external device and the external network <i.e. is the external device connected to the virtual machine by the external network?>.

ii)   As per claim 3, line 2-3, claim 20, lines 1-3, and claim 26, it recites "...and other virtual machines from a CPU and other real resources of a real computer, and providing a communication pathway..." It is unclear how the CPU, the real computer and the communication pathway are related to the CPU, the real computer and the communication pathway recited in claim 1 < i.e. is the CPU the same CPU as that of claim 1? >

Claim 3, Line 4, it is uncertain if "said base portion" refers to a virtual machine operating system base portion in Claim 1, lines 2-3 <i.e. if they are the same>.

iii)   As per claim 4, line 3, claim 21, and claim 27, it recites "said base portion determines..." It is unclear how the invention as claimed does the

determining step and the method it uses to determine that the IP address does not correspond to other virtual machines.

iv)   As per claim 8, lines 2-3, claim 22, lines 2-3, and claim 28, it recites "said first virtual machine writing a second IP datagram to a second output buffer allocated to said first virtual machine". it is unclear where the second output buffer is located. Furthermore, it is unclear if the second output buffer may be the same as the first output buffer mentioned in claim 1.

Claim 8, Lines 6-7, claim 22, line 5-6, and claim 28, it recites "copying said second IP datagram from said second output buffer into storage allocated to said base portion". It is unclear if the storage is the same storage as that mentioned in claim 1.

Claim 8, Lines 11-12, claim 22, line 10-11, and claim 28, it recites "copying said second IP datagram into an input buffer allocated to said second virtual machine without said second IP datagram leaving said computer", it is unclear where the input buffer is located in the system.

Claim 8, Lines 3-4, claim 22, and claim 28, it is unclear if "said virtual machines" refers to other virtual machines on line 3 in claim 1.

v)   As per claim 16, line lines 3-4, it recites "said request including request data and said destination IP address". it is unclear if the request data may be the same as the data found in the datagram. It is also unclear what the difference is between the IP datagram and the request.

vi)   As per claim 17, lines 2-3, claim 23, and claim 29, it recites "A

second one of said virtual machines writing a second IP datagram to a

second output buffer allocated to said second virtual machine ". It is

unclear if the second output buffer may be the same as the second output

buffer mentioned in claim 8. Also it is unclear where the second output

buffer is located.

Claim 17, Lines 10-11, claim 23, and claim 29, it recites

"determining from said second destination IP address that said second

destination IP address doest not correspond to any of the other virtual

machines or otherwise reside in said compute". It is unclear how the

invention as claimed does the determining step and the method it uses to

determine that the IP address does not correspond to other virtual

machines. Moreover, it is unclear what "otherwise reside in said computer"

means < i.e. does it mean that there are other components that the IP

datagram can be sent to other than virtual machines that reside in the

computer? >.

Claim 17, line 11, claim 23, and claim 29, it is uncertain if "said

computer" refers to "a real computer" on line 4 of claim 1.

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

7.   Claims 1, 3, 4, 8, 16-30 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Virtualizing I/ Devices on VMware Workstation's Hosted Virtual

Machine Monitor (hereafter VMware) in view of Bornstein et al., Patent No. 7,228,337

(hereafter Bornstein).

VMware was cited in the last office action.

8.   As per claim 1, VMware teaches a method for communication from a first virtual

machine *(Fig 3, the middle virtual machine shown in the picture)* to an external device, a

virtual machine operating system base portion *(Fig 3: the entire block that all VMM sits*

on in Fig 3 including the Host OS and hardware) defining said first virtual machine and

other virtual machines *(Fig 3, VM to the right)* from a CPU and other real resources of a

real computer, said method comprising the steps of:

> Said base portion providing said first virtual machine and said other virtual
>
> machines with a share of said CPU *(Section 2, first sentence of the third*

paragraph: *"in this architecture, the CPU virtualization is handled by the VMM"*

implies that the CPU is shared between virtual machines and hosts.)

said base portion being common to all of said virtual machines *(Fig 3: all VM and*

VMMs sits on top of the host OS)

said first virtual machine writing a datagram to an output buffer allocated to said

first virtual machine, *(Fig 3: Virtual NIC corresponds to output buffer; Figure 4,*

left diagram and section 2.3, first paragraph)

said base portion copying said datagram from said output buffer into storage

allocated to said base portion such that said IP datagram passes from said first

virtual machine into said storage of said base portion without passing through

any other virtual machine *(Fig 3; left diagram of Fig 4: VMNet Driver corresponds*

to the storage; it is inherent that the system as disclosed does not allow the

datagram to pass through any other VM since connection between VMs does not

exist.)

said base portion forwarding said datagram to a tangible network adapter card

coupled to an external network and *(Third paragraph of Section 2.2 and first*

paragraph of section 2.3)

said tangible network adapter card sending said datagram to the destination

address via said external network *(Third paragraph of Section 2.3 and Fig4)*

9.   VMware does not specifically disclose

said base portion identifying said destination IP address from said IP datagram

and determining from said IP destination address that said destination IP address

does not correspond to any of said other virtual machines or otherwise reside in said computer and in response sending it to an external network.

10.   However, Bornstein teaches said base portion identifying said destination IP address from said IP datagram and determining from said IP destination address that said destination IP address does not correspond to any of said other virtual machines or otherwise reside in said computer and in response sending it to an external network *(Fig 3, 4, 7; Column 6, lines 33-41; Column 7, lines 22-27; Column 8, lines 44-52; Column 9, lines 32-40; Column 10, lines 5-24)*

11.   It would have been obvious to one having ordinary skill in the art at the time of the applicant's invention to modify the teachings of VMware with said base portion identifying said destination IP address from said IP datagram and determining from said IP destination address that said destination IP address does not correspond to any of said other virtual machines or otherwise reside in said computer and in response sending it to an external network, because it allows a virtual machine to provide content to the external device while communication between two virtual machines is still possible *(Bornstein, Column 9, lines 32-33; Column 10, lines 12-19)*

12.   As per claim 3, VMware teaches wherein the steps of defining said fist virtual machine and other virtual machines from a CPU and other real resources of a real computer, and providing a communication pathway between said first virtual machine and said other virtual machines, are performed by a single instance of said base portion *(Section 2, second paragraph: the host operating system corresponds to the base*

portion, as also shown in Fig 3, and moreover, it establishes other VMMs and

consequently VMs to run on.)

13.   As per claim 4, VMware does not specifically teach wherein said base portion

includes a list of destination IP addresses associated with each of said virtual machines,

and said base portion determines that said destination IP address in said IP datagram is

not associated with any of said virtual machines by checking said list. However,

Bornstein teaches wherein said base portion includes a list of destination IP addresses

associated with each of said virtual machines, and said base portion determines that

said destination IP address in said IP datagram is not associated with any of said virtual

machines by checking said list *(Fig 3, 4, 7; Column 6, lines 33-41; Column 7, lines 22-*

27; Column 8, lines 44-52; Column 9, lines 32-40; Column 10, lines 5-24).

14.   As per claim 8, VMware teaches

said first virtual machine writing a second datagram to a second datagram to a

second output buffer allocated to said first virtual machine, said second datagram

comprising second data and a second destination address and said base portion

copying said second datagram from said second output buffer into storage

allocated to said base portion such that said second datagram passes from said

first virtual machine into said base portion storage without passing through any

other virtual machines *(Fig 3; Fig 4; Section 2.2; Note, the Examiner has*

interpreted the second output buffer to be the same as the first output buffer).

15. VMware does not specifically teach

said base portion determining that said second destination IP address is an IP

address of said second virtual machine and in response, said base portion

copying said second IP datagram into an input buffer allocated to said second

virtual machine without said second IP datagram leaving said computer.

However, Bornstein teaches said base portion determining that said second

destination IP address is an IP address of said second virtual machine and in

response, said base portion *(Column 4, lines 55 to 60: base portion corresponds*

to the native operating system) copying said second IP datagram into an input

buffer *(Fig 2, Net INT, unit 57)* allocated to said second virtual machine without

said second IP datagram leaving said computer *(Column 9, lines 32 to 40).*

16. As per claim 16, VMware teaches

an application program executing in said first virtual machine and forming a

request to the external device, said request including request data and said

destination address associated with said external device; and wherein said

datagram written by said first virtual machine to said output buffer allocated to

said first virtual machine is base on said request *(paragraph 3 of section 2.2 and*

Figure 3)

17. VMware does not teach

The destination is an IP address. However, Bornstein teaches the destination is

an IP address *(Column 7, lines 22-27; Column 10, lines 10-25)*

18.   As per claim 17, it recites the same method step as claim 1, except it is done by

a second virtual machine. Since both teachings found in VMware and Bornstein

inherently teaches that every single virtual machine are capable of performing the

method steps of claim 1, and claim 1 is rejected, claim 17 is rejected as well.

19.   As per claim 18, it is inherent that the host operating system (VMware) has the

program with the necessary instructions to perform the reading and the copying and the

native operating system (Bornstein) also has the program with the necessary

instructions to perform identifying and determining and forwarding.

20.   As per claim 19, it contains all the physical components mentioned in the method

step of claim 1, and are capable of performing the method steps of claims 1. Since

claim 1 is rejected, claim 19 is rejected as well.

21.   As per claim 20, it contains all the physical components mentioned in the method

step of claim 3, and are capable of performing the method steps of claims 3. Since

claim 3 is rejected, claim 20 is rejected as well.

22.   As per claim 21, it contains all the physical components mentioned in the method

step of claim 4, and are capable of performing the method steps of claims 4. Since

claim 4 is rejected, claim 21 is rejected as well.

23.   As per claim 22, it contains all the physical components mentioned in the method step of claim 8, and are capable of performing the method steps of claims 8. Since claim 8 is rejected, claim 22 is rejected as well.

24.   As per claim 23, it contains all the physical components mentioned in the method step of claim 17, and are capable of performing the method steps of claims 17. Since claim 17 is rejected, claim 23 is rejected as well.

25.   As per claim 24, it contains all the physical components mentioned in the method step of claim 18, and are capable of performing the method steps of claims 18. Since claim 18 is rejected, claim 24 is rejected as well.

26.   As per claim 25, it is a computer program product that contains all the necessary instructions to perform the method step of claim 1. Since claim 1 is rejection, claim 25 is rejected as well.

27.   As per claim 26, it is a computer program product that contains all the necessary instructions to perform the method step of claim 3. Since claim 3 is rejection, claim 26 is rejected as well.

28.   As per claim 27, it is a computer program product that contains all the necessary instructions to perform the method step of claim 4. Since claim 4 is rejection, claim 27 is rejected as well.

29.   As per claim 28, it is a computer program product that contains all the necessary instructions to perform the method step of claim 8. Since claim 8 is rejection, claim 28 is rejected as well.

30.   As per claim 29, it is a computer program product that contains all the necessary instructions to perform the method step of claim 17. Since claim 17 is rejection, claim 29 is rejected as well.

31.   As per claim 30, it is a computer program product that contains all the necessary instructions to perform the method step of claim 18. Since claim 18 is rejection, claim 30 is rejected as well.

Response to Arguments

32.   Applicant's argument filed on 4/26/2007 regarding to claims 1, 3-4, 8, 16-30 have

been fully considered, but they are moot in view of the new ground of rejection.

33.   The Examiner respectfully disagrees with Applicant's arguments directed towards

the teachings of VMware, more specifically:

> The applicants argue on Pg 14 that Vmware only discloses layer 2
>
> communications based on MAC addresses. However, this is not the only
>
> communication layer used by VMware, as it further discussed in section 2.2, that
>
> the host OS can perform IP masquerading to connect to external network.
>
> Moreover, in Bornstein, it discloses that all the virtual machines sharing a native
>
> operating system are able to communicate with one another as well as
>
> communicating with the external network.

> The applicant also argues that VMware teaches a separate Virtual Machine
>
> Monitor for each virtual machine, thus the VMMs of VMware are not common to
>
> all the virtual machines. While it is true that there are multiple VMMs, it is the host
>
> OS, not the VMM, that is common to all the virtual machines, as show in figure 3
>
> and described in second paragraph of section 2.

Conclusion

34.   Applicants' amendments necessitated the new grounds of rejection presented in this office action. Accordingly, **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

35.   A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

36.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to MengYao Zhe whose telephone number is 571-272-6946. The examiner can normally be reached on Monday Through Friday, 10:00 - 8:00 EST. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached at 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

MENG-AL T. AN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100